Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

TITLE V (DRAFT PERMIT) NO. V-05-079
KENTUCKY SOLITE CORPORATION
BROOKS, KY
JUNE 12, 2006
TIMOTHY RUST, REVIEWER
SOURCE I.D. #: 21-029-00002
SOURCE A.I. #: 454
ACTIVITY #: APE20050002

SOURCE DESCRIPTION:

Kentucky Solite Corporation submitted an operating permit application that was received by the Division for Air Quality (DAQ) on January 30, 2006. The facility currently operates under two permits, O-85-056-Revision 2 and S-94-101, which will be consolidated into a source-wide Title V permit. The facility operates two Light Weight Aggregate Rotary Kilns, Emission Unit (EU) 02 and EU 03, primarily fired by coal with secondary fuels including natural gas, fuel oil, and both on-specification and off-specification used oil. Additionally, individual plant emission points are grouped together in the emission unit list below including Raw Material Handling and Processing (EU 05), Finished Product Handling and Processing (EU 06), Lime Handling (EU 07), Haul Road and Yard (EU 08), Coal Handling and Processing (EU 09), and Light Aggregate Kiln Dust (LAKD) Storage and Handling (EU 11 & EU 12). Each of these groups includes primary crushers, secondary crushers, vibrating screens, conveyors, storage bins, silos, stockpiles, and miscellaneous equipment specific to the individual process.

The facility produces lightweight aggregate products from raw Shale, Clay, Slate, and/or Recycled Process Particulate Matter. Raw material is mined from an onsite quarry or brought onsite via rail or truck. It is introduced into the process through primary crushers and screened for size before being separated and conveyed to raw material storage silos or to the bulk fines storage bin. The bulk fines can either be sold straight to the customer, transferred to the extruder bin where it is stored then mixed with LAKD (recycled matter) and sent to the Kilns when needed, or transferred to the quarry as backfill. The Kilns are fired to a temperature in excess of 1800 °F then the raw material is added from the silos or extruder. The material is expanded into clinker by pyro-processing whereby the raw material liquefies and its carbonaceous compounds form gas bubbles that bloat and expand the material driving off moisture and VOCs. The clinker is cooled, then crushed and sent to the clinker stockpiles. Finish product is produced to customer specifications through secondary crushing, screening, and specialty product mixing. Finished products are shipped to customers via truck or rail while out-of-spec material is backfilled to the quarry or recycled back into raw material. Emissions from the kilns are controlled primarily through wet scrubbers. Secondary controls are also available through baghouses with optional lime injection. Dust from the baghouses can be recycled into raw material or backfilled to the quarry along with the scrubber sludge. The facility is a major source for sulfur dioxide (SO2), particulate matter (PM_{10}), and nitrogen oxides (NOx).

COMMENTS:

- The following is a list significant emission points grouped by EU's permitted for this facility:

Emission Unit 02	Lightweight Aggregate Rotary Kiln #2 and Clinker Cooler #2
Emission Unit 03	Lightweight Aggregate Rotary Kiln #3
Emission Unit 04	Clinker Cooler #3
Emission Unit 05A	Raw Material Handling and Processing, emission points include storage piles and equipment commencing construction, reconstruction, or modification on or before August 31, 1983
Emission Unit 05B	Raw Material Handling and Processing, emission points include equipment commencing construction, reconstruction, or modification after August 31, 1983
Emission Unit 06A	Finish Product Processing and Handling, emission points include storage piles and equipment commencing construction, reconstruction, or modification on or before August 31, 1983
Emission Unit 06B	Finish Product Processing and Handling, emission points include equipment commencing construction, reconstruction, or modification after August 31, 1983
Emission Unit 06C	Alternate Finish Product Processing and Handling, emission points include equipment commencing construction, reconstruction, or modification on or before August 31, 1983
Emission Unit 07	Lime Storage Silo and Lime Handling
Emission Unit 08	Haul Road and Yard Area including Slurry Pond Cleaning
Emission Unit 09	Coal Handling and Processing including stockpiles
Emission Unit 11	Light Aggregate Kiln Dust (LAKD) Storage Silo
Emission Unit 12	LAKD Filter Receiver

- Kiln 3 was permitted to burn Liquid Burnable Material (LBM) in 1985 (O-85-56) and Kiln 2 in 1987 (O-85-56-Revision 1). In 1993, the facility became subject to revised Boiler and Industrial Furnace (BIF) Regulations, which established separate kiln operating limits while burning Hazardous Waste (C-93-21). Additional controls were also added the next year (S-94-101). About 2002, the facility stopped burning hazardous waste, currently is no longer regulated by BIF, and have physically removed all hazardous waste storage facilities. This permit removes LBM and Hazardous Waste as an allowable fuel but does allow both On-spec and Off-spec Used Oil as a secondary fuel. Used Oil containing 1,000 ppm or more total halogens is presumed to be a hazardous waste which may be rebutted by the permittee pursuant to 40 CFR 279.10 (b) (1).

COMMENTS: (CONTINUED)

- Kiln 1 has not been operated since 1983. Although listed in the original operating permit (O-76-26), it never was permitted to burn LBM or Hazardous Waste so was never carried forward and listed in subsequent permitting actions. The Division has determined Kiln 1 to be permanently shutdown and will not be included in this permit. The permittee will proceed with the demolition and removal of Kiln 1 from the facility.

- The heat inputs, fuel usage rates, and other operating parameters listed in this permit for Kiln 2 and Kiln 3 reflect design capabilities of the units prior to limitations imposed by BIF and LBM permitted usage. Any change to corresponding operational and/or emission limitations from the existing operating permit to this draft permit is a result of using these parameters in calculations to determine original potential to emit (PTE) and emission standards.

- The Hydrogen Chloride (HCl) emission limitation rate of 194 lbs/hr (O-85-056-Revision 2) had been established to limit emissions from the chlorinated solvents and chlorinated byproducts present in hazardous waste and LBM used as fuel. Currently, coal burning is the only significant source of HCl emissions. The coal usage operating limits in the permit represent a 99.0 percent reduction in HCl emissions PTE from the prior emission limitation. Additionally, the permit contains limits on the Halogen content allowable in the Used Oil that further limits HCL emissions PTE, therefore the specific HCl emission limitation will not be included in this permit.

- The permittee has requested a permit limitation for percentage sulfur content in fuel to be included in this permit. This percentage was used to calculate SO2 PTE along with the most recent AP-42 emission factors for this and all other pollutant PTE's.

- The permittee has proposed construction of a stationary crusher (FC3), stationary hopper (FS2), and mobile stacking conveyors (MB4, MB5, MB6, & MB7) for Emission Unit 06; Feed Bin (PS5), and conveyors (PB8, PB9, & PB10) for Emission Unit 05; and a conveyor (CB7) for Emission Unit 09. The potential emissions from these facilities are well below the Significant Net Emission Rates listed in 401 KAR 51:017 (PSD) and therefore, qualifies as a minor modification. The permittee shall adhere to the construction requirements listed in the General Conditions Section of this permit for these emission points and conduct initial performance testing as specified for each affected facility.

- After the application was declared complete, the permittee requested a minor modification to upgrade emission point FU2 from a double deck screen to a triple deck screen. The Division determined that this modification will have negligible affect on PTE and granted permission to proceed with the modification. The new description is included in this permit under EU 06B.

APPLICABLE REGULATIONS:

401 KAR 61:020, Existing Process Operations that commenced before July 2, 1975, applies to EU 02 Kiln #2, EU 03, and EU 04.

401 KAR 59:010, New Process Operations Commencing after July 2, 1975, applies to EU 07, EU 11, and EU 12.

40 CFR 279 subpart G, Standards for Used Oil Burners who burn Off-specification Used Oil for Energy Recovery, applies to EU 02 Kiln #2 and EU 03.

APPLICABLE REGULATIONS:(continued)

40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions, applies to EU 02 Kiln #2 and EU 03.

401 KAR 63:010, Fugitive Emissions Fugitive emissions is applicable to each affected facility which emits or may emit fugitive emissions and is not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality, applies to EU 02 Clinker Cooler, EU 05A, EU06A, EU06C, EU 08, and EU 09.

401 KAR 60:670, Incorporating by reference 40 CFR 60, Subpart OOO (as modified by Section 3 of 401 KAR 60:670), Standards of Performance for Nonmetallic Mineral Processing Plants, commencing construction, reconstruction, or modification after August 31, 1983; applies to EU 05B and EU 06B.

EMISSION AND OPERATING CAPS DESCRIPTION:

- Emission Unit 02 Kiln 2

Pursuant to 401 KAR 61:020, Section 3(2)(a), particulate emissions for Kiln #2 shall not exceed 22.2 pounds per hour based on a three hour average and 97.2 tons/year. The permittee may assure compliance with the particulate emission standard for Kiln #2 using the equations listed in the permit.

Pursuant to 401 KAR 61:020, Section 3(1)(a), for Kiln #2, the permittee shall not cause, suffer, allow, or permit any continuous emissions into the open air from a control device or stack which is equal to or greater than forty (40) percent opacity based on six-minute averages.

Pursuant to 401 KAR 50:012, Section 1(2), sulfur content of number 2 fuel oil or used oil burned shall not exceed 1.5 percent by weight; and, coal sulfur content received and burned shall not exceed 2.5 lbs/mmBtu gross heat content, shall not exceed 1.9 lbs/mmBtu gross heat content in any three month rolling average, and shall not exceed 1.7 lbs/mmBtu gross heat content in any twelve month rolling average. The permittee may assure compliance with these sulfur content limitations by calculating the daily sulfur content, three-month rolling average, and twelve-month rolling average from the daily as- received fuel records.

Pursuant to 40 CFR 279 and 40 CFR 761.20, On-Specification (On-Spec) Used Oil shall not exceed the allowable levels below:

On-Spec Used Oil Specifications

Constituent/Property	Allowable Level
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Total Halogens	4,000 ppm maximum
Flash Point	100 °F minimum
PCBs	less than 2 ppm

EMISSION AND OPERATING CAPS DESCRIPTION: (CONTINUED)

- Emission Unit 02 Kiln 2 (continued)

Pursuant to 401 KAR 50: 012, Section 1 (2), and 40 CFR 761.20, Off-Specification (Off-Spec) Used Oil shall not exceed the allowable levels below:

Off-Spec Used Oil Specifications

Constituent/Property	Allowable Level
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Total Halogens	10,000 ppm maximum
Flash Point	100 °F minimum
PCBs	less than 50 ppm

The permittee shall demonstrate compliance with each of the above Used Oil Specifications by using approved EPA or ASTM test methods or a certified used oil analysis pursuant to 40 CFR 279 and 40 CFR 761.20. Used oil containing 1,000 ppm or more total halogens is presumed to be a hazardous waste which may be rebutted by the permittee pursuant to 40 CFR 279.10 (b) (1).

While burning coal, the fuel feed rate for Kiln #2 shall not exceed 1.42 tons per hour and the process weight shall not exceed 24,840 pounds per hour. While burning natural gas, fuel oil, or used oil, the process weight rate shall not exceed 22,000 pounds per hour.

The permittee shall perform at least one performance test on Kiln #2 for particulate emissions during the life of this permit to demonstrate compliance with the particulate standard. The Kiln #2 performance test for particulates shall be conducted while operating the primary control device, wet scrubber (PP2A), unless a variance is requested of and granted by the Division.

The permittee shall perform a qualitative visual observation of the opacity of emissions from the Kiln 2 control device in operation on a daily basis and maintain a log of the observations. If visible emissions are seen, excluding the wet scrubber vapor portion of the plume, the permittee shall initiate an inspection of the unit and if necessary, make repairs or adjustments to the emission control process. At a minimum of once per month, USEPA Reference Method 9 observations shall be performed.

The permittee shall conduct a performance test for particulate and sulfur dioxide emissions when combusting fuel oil or used oil if such usage exceeds 60 days within any consecutive twelve-month period.

- Emission Unit 03 and EU 04

Pursuant to 401 KAR 61:020, Section 3(2)(a), particulate emissions for Kiln #3 shall not exceed 41.9 pounds per hour based on a three hour average and 184.5 tons/year and for Kiln #3 Clinker Cooler shall not exceed 40.0 pounds per hour based on a three hour average. The permittee may assure compliance with the particulate emission standard for Kiln #3 and the Kiln #3 Clinker Cooler using equations listed in the permit.

EMISSION AND OPERATING CAPS DESCRIPTION: (CONTINUED)

- Emission Unit 03 and EU 04 (continued)

Pursuant to 401 KAR 61:020, Section 3(1)(a), for both Kiln #3 and the Kiln #3 Clinker Cooler, the permittee shall not cause, suffer, allow, or permit any continuous emissions in to the open air from a control device or stack which is equal to or greater than forty (40) percent opacity based on six-minute averages.

Pursuant to 401 KAR 50:012, Section 1(2), sulfur content of number 2 fuel oil or used oil burned shall not exceed 1.5 percent by weight; and, coal sulfur content received and burned shall not exceed 2.5 lbs/mmBtu gross heat content, shall not exceed 1.9 lbs/mmBtu gross heat content in any three month rolling average, and shall not exceed 1.7 lbs/mmBtu gross heat content in any twelve month rolling average. The permittee may assure compliance with these sulfur content limitations by calculating the daily sulfur content, three-month rolling average, and twelve-month rolling average from the daily as- received fuel records.

Pursuant to 40 CFR 279 and 40 CFR 761.20, On-Specification (On-Spec) Used Oil shall not exceed the allowable levels below:

On-Spec Used Oil Specifications

Constituent/Property	Allowable Level
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Total Halogens	4,000 ppm maximum
Flash Point	100 °F minimum
PCBs	less than 2 ppm

Pursuant to 401 KAR 50: 012, Section 1 (2), and 40 CFR 761.20, Off-Specification (Off-Spec) Used Oil shall not exceed the allowable levels below:

Off-Spec Used Oil Specifications

Constituent/Property	Allowable Level
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Total Halogens	10,000 ppm maximum
Flash Point	100 °F minimum
PCBs	less than 50 ppm

The permittee shall demonstrate compliance with each of the above Used Oil Specifications by using approved EPA or ASTM test methods or a certified used oil analysis pursuant to 40 CFR 279 and 40 CFR 761.20. Used oil containing 1,000 ppm or more total halogens is presumed to be a hazardous waste which may be rebutted by the permittee pursuant to 40 CFR 279.10 (b) (1).

While burning coal, the fuel feed rate of Kiln #3 shall not exceed 4.27 tons per hour and the process weight shall not exceed 74,540 pounds per hour. While burning natural gas, fuel oil, or used oil, the process weight rate shall not exceed 66,000 pounds per hour.

EMISSION AND OPERATING CAPS DESCRIPTION: (CONTINUED)

- Emission Unit 03 and EU 04 (continued)

The permittee shall perform at least one performance test on Kiln #3 for particulate emissions during the life of this permit to demonstrate compliance with the particulate standard. The Kiln #3 performance test for particulates shall be conducted while operating the primary control device, wet scrubber (PP1A), unless a variance is requested of and granted by the Division.

The permittee will not be required to conduct a performance test on Kiln #3 clinker cooler for particulate emissions during the life of this permit to demonstrate compliance with the particulate standard. However, the Division may request a performance test be conducted for reasons including, but not limited to multiple reported opacity limitation exceedances.

The permittee shall conduct a performance test for particulate and sulfur dioxide emissions when combusting fuel oil or used oil if such usage exceeds 60 days within any consecutive twelve-month period.

The permittee shall perform a qualitative visual observation of the opacity of emissions from the Kiln 3 control device in operation and Clinker Cooler stack on a daily basis and maintain a log of the observations. If visible emissions are seen, excluding the wet scrubber vapor portion of the plume, the permittee shall initiate an inspection of the unit and if necessary, make repairs or adjustments to the emission control process. At a minimum of once per month, USEPA Reference Method 9 observations shall be performed.

- Emission Points of Equipment associated with Emission Units 02, 05A, 06A, 06C, 08, and 09 Subject to Fugitive Emission Standards:

The total amount of finished material onsite at any one time shall not exceed 332,880 ton.

To preclude applicability of 401 KAR 60:005, incorporating by reference 40 CFR 60, subpart Y Standards of Performance for Coal Preparation Plants commencing construction or modification after October 24, 1974, each affected facility processing coal shall not process more than 200 tons of coal each day.

The materials processed at each affected facility listed in the permit under this subsection shall be controlled with wet suppression, enclosures, and/or dust collection equipment so as to comply with the requirements specified in 401 KAR 63:010, Section 3, Standards for Fugitive Emissions. However, 40 CFR 279.12 (b) prohibits the use of Used Oil as a dust suppressant.

Pursuant to 401 KAR 63:010, Section 3 (1), no person shall cause, suffer, or allow any material to be handled, processed, transported, or stored; a building or its appurtenances to be constructed, altered, repaired, or demolished, or a road to be used without taking reasonable precaution to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the list found in the permit.

EMISSION AND OPERATING CAPS DESCRIPTION: (CONTINUED)

- Emission Points of Equipment associated with Emission Units 02, 05A, 06A, 06C, 08, and 09 Subject to Fugitive Emission Standards: (continued)

For the purpose of demonstrating continuous compliance, Pursuant to 401 KAR 50:055, General compliance requirements, Section 2(5), all air pollution control equipment and all pollution control measures proposed by the application in response to which this permit is issued shall be in place, properly maintained, and in operation in accordance with the manufacturer's specifications and/or standard operating procedures at any time an affected facility for which the equipment and measures are designed is operated, except as provided by 401 KAR 50:055, Section 1. The permittee shall record the occurrence, duration, cause, and any corrective action taken for each incident when the emission points are in operation but the associated control equipment is not.

Visual observations shall be made during each shift, and when any change in method of operation or material occurs, of all operations and control equipment to ensure the control equipment is functioning while the associated equipment is in operation and to determine if any fugitive air emissions are being generated in such a manner as to cause a nuisance or to cross the property line. In addition, visual observations shall be made daily during plant operation to determine if fugitive dust is becoming airborne from the haul road, yard area, or storage areas as the result of vehicular traffic or windy conditions. If such a conditions develop, water or a chemical wetting agent shall be applied to these areas as specified in 401 KAR 63:010.

- Emission Points of Equipment associated with Emission Units 05B and 06B Subject to New Source Performance Standards:

For emission points FS2, MS1, MB1, MB2, MB3, MB 4, MB5, MB6, MB7, and PE1, pursuant to 401 KAR 60:670, incorporating by reference 40 CFR 60.672 (b), no owner or operator shall cause to be discharged into the atmosphere any fugitive emissions which exhibit greater than ten (10) percent opacity.

For emission points FU1, FU2, and FU3, pursuant to 401 KAR 60:670 Section 3(1)(b), where US EPA Reference Method 9 can not be applied for an affected facility enclosed inside a building, and pursuant to 401 KAR 60:670 Section 3(2)(c), where that same building encloses a crusher (FC1 or FC2), the discharge of fugitive emissions shall not exceed fifteen (15) percent opacity.

For emission points MC1, and FC3, pursuant to 401 KAR 60:670, incorporating by reference 40 CFR 60.672 (c), no owner or operator shall cause to be discharged into the atmosphere from any crusher, at which a capture system is not used, any fugitive emissions which exhibit greater than fifteen (15) percent opacity.

For emission point PS4, pursuant to 401 KAR 60:670, incorporating by reference 40 CFR 60.672 (f), no owner or operator shall cause to be discharged into the atmosphere from any baghouse that controls emissions from only an individual, enclosed storage bin, stack emissions which exhibit greater than seven (7) percent opacity.

For the purpose of demonstrating continuous compliance, qualitative observations are required during each shift, and when any change in method of operation or material occurs, of all operations and control equipment to ensure the control equipment is functioning while the associated equipment is in operation and to determine if any air emissions are visible from the equipment or the controls.

EMISSION AND OPERATING CAPS DESCRIPTION: (CONTINUED)

- Emission Points of Equipment associated with Emission Units 05B and 06B Subject to New Source Performance Standards:

The qualitative observations will be done at a processing rate of the equipment that would preclude circumvention of the intent of this requirement. If visible emissions are seen coming from any emission point or any enclosure housing listed within this subsection, the permittee shall initiate an inspection of the emission unit and if necessary, make repairs or adjustments to the emission controls. At a minimum of once per calendar quarter, USEPA Reference Method 9 and Method 22 observations shall be performed as outlined in the permit.

- Emission Unit 07 Lime Storage Silo and Lime Handling
  Emission Unit 11 (PS1) Light Aggregate Kiln Dust (LAKD) Storage Silo
  Emission Unit 12 (FP1) LAKD Filter Receiver

The operating rates for the LAKD processes including Emission Unit 11 (PS1) and Emission Unit 12 (FP1) shall not exceed 15,000 lbs/hour each.

Pursuant to 401 KAR 59:010 Section 3 (2), particulate emissions from Emission Unit 11 (PS1) and Emission Unit 12 (FP1) shall not exceed 12.5 lbs/hour each based on a three-hour average and 54.8 tons/year each, and particulate emissions from Emission Unit 7 (PS2) shall not exceed 26.4 lbs/hour on a three hour average and 115.7 tons/year. The permittee may assure compliance with the particulate emission standard by using the equations listed in the permit.

For Emission Units 11 (PS1), 12 (FP1), and 7 (PS2), pursuant to 401 KAR 59:010, Section 3(1)(a), the permittee shall not cause, suffer, allow, or permit any continuous emissions in to the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity based on six-minute averages.

The permittee will not be required to conduct performance tests for particulate emissions for each of these emission units during the life of this permit to demonstrate compliance with the particulate standard. However, the Division may request a performance test be conducted for reasons including, but not limited to multiple reported opacity standard exceedances.

While each unit is in operation, the permittee shall monitor the amount of LAKD and Lime processed on an hourly basis. The permittee shall perform a qualitative visual observation of the opacity of emissions for each emission unit on a daily basis when operating and maintain a log of the observations. At a minimum of once per calendar quarter when an emission unit operated, USEPA Reference method 9 observations shall be performed.

OPERATIONAL FLEXIBILITY:

The permittee may operate Kiln 2 and Kiln 3, under normal conditions, using any of the alternative control devices listed in the permit with no allowance for variance from all of the emission limitations contained therein. Furthermore, the permittee shall not use the same control device to control emissions while simultaneously operating Kiln 2 and Kiln 3 except during a unit malfunction, and then, only long enough to safely shutdown the malfunctioning unit or safely startup an alternative control device.

OPERATIONAL FLEXIBILITY: (CONTINUED)

The permittee may operate each or all of the mobile equipment to process raw material, finished product, or coal, as specifically listed in the permit, under normal conditions, and with no allowance for variance from all the emission limitations contained within this permit. For each operating scenario listing a piece of mobile equipment, the permittee shall comply with emission limitations specified for each emission unit while to the extent practical, maintain and operate any affected facility, including employing appropriate control measures, in a manner consistent with good air pollution control practice for minimizing emissions.

The permittee shall notify the Division when each or all of the mobile equipment is removed from the plant site at least 15 days prior to removal. Also, the permittee shall notify the Division when each or all of the mobile equipment, previously removed from the plant site, is returned to the plant site at least 15 days prior to initial startup.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.